PATENT SPECIFICATION

323,716

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PROVISIONAL SPECIFICATION.

No. 22,500, A.D. 1928.

Improvements in Filler-caps for the Petrol and Oil Tanks of Motor-cycles and the like.

We, JAMES DOHERTY and JAMES DOHERTY the younger, both British Subjects, of 40, High Street, Deritend, Birmingham, do hereby declare the nature of this invention to be as follows:—

This invention has reference to filler caps or closures for the filling orifices of petrol and oil tanks such as are used on motor-cycles and the like, and has for its object, to provide an inexpensive but efficient device which enables the liquid-tight sealing of a filling orifice by a simple screw movement.

According to the said invention, it is proposed to braze or otherwise secure within the orifice of a tank, a sleeve-like mount or body portion comprising, in a part that stands above the top of the tank when the ring is in situ, a screw-threaded collar which provides an annular shouldering which is of larger diameter than the plain portion of the ring intervening between the threaded collar and the top of the tank. The threaded collar carries an internally-threaded rotatable ring having an internal shoulder opposed to the shouldering on the fixed mount. This ring carries a cap or closure piece which is faced on its underside with a sealing-washer or ring of leather or other compressible material and is adapted, normally, or when in its orifice-closing position, to be rotatable as a unit with the internally-screwed ring.

These parts are so dimensioned and arranged that, after the closure cap has been closed and fastened over the top of its screwed carrier-ring, the screwing of the ring and cap downwardly or inwardly upon the mount will cause the sealing-ring or washer on the inside of the cap to bed or seat tightly upon the mouth-edge of the mount inside the collar and thus make a liquid-tight joint between the cap or the mount. This screwing action also binds the cap it its closed position by screw-thrust, whereas the collective unscrewing of the cap and its carrier in the upward or reverse direction lifts the sealing washer off the mouth of the mount and takes the screw thrust off the cap, enabling the latter to be opened or removed. The unscrewing of the cap and ring unit may be limited, to prevent complete detachment from the mount, by the internal collar of the ring coming against the shouldering below the screw-threaded part of the ring.

As an alternative arrangement which enables the brazing of the mount into the tank-orifice before the cap-carrier ring is screwed on, the collar inside the ring may be dispensed with and the ring may be fitted, after screwing onto the mount, with small hook-ended or headed keepers or stop devices, the hooks or heads of which are adapted to come into engagement with the external shouldering of the mount and stop further rotation of the cap-and-ring unit after the latter has been unscrewed sufficiently to break the seal and release the cap.

The cap may be hinged and fastened to its carrier ring in any convenient manner, but preferably the ring is formed, on opposite sides of its diameter, with lugs projecting radially from its periphery and the top of one of these lugs is furnished with a perpendicular pivot pin on which the cap is mounted to swing in a plane parallel with the tank-orifice whilst the other lug is furnished with a headed anchoring pin, the stem of which is adapted to be engaged by a hook or jaw projecting radially from the periphery of the cap. When the cap-hook is thus engaged with the anchoring stud on its carrier ring, the screwing down of the ring against the mouth of the mount brings the cap under a screw-thrust that binds its fastening hook against the head of the anchoring pin.

Instead of hinging the cap to its carrier-ring, it may be detachably connected by a system of studs and bayonet slots so arranged that the studs are forced into

[Price 1/-]

engagement with locking recesses in the bayonet slots by the screw thrust exerted on the cap when the cap-and-ring unit are screwed down into the mouth-sealing position.

Dated this 2nd day of August, 1928.
ARTHUR SADLER,
Chartered Patent Agent,
44, Waterloo Street, Birmingham,
Agent for the Applicants.

PROVISIONAL SPECIFICATION.

No. 27,067, A.D. 1928.

Improvements in Filler-caps for the Petrol and Oil Tanks of Motor Cycles and the like.

We, JAMES DOHERTY and JAMES DOHERTY the younger, both Subjects of the King of Great Britain, of 40, High Street, Deritend, Birmingham, do hereby declare the nature of this invention to be as follows:—

Our invention has reference to filler caps or closures for the filling orifices of petrol and oil tanks such as are used on motor-cycles and the like and comprises certain developments or modifications of the invention described in the Provisional Specification of our former Application for Letters Patent dated the 3rd day of August 1928, No. 22,500.

According to a feature of the invention described in our said former Specification, the closure-cap may be pivotted to a perpendicular pivot-pin carried on a lug projecting radially from the periphery of the carrier ring and have, for fastening purpose, a hook projecting radially from the periphery of the cap and adapted for engagement, when the said cap is closed, with a perpendicular and headed anchoring pin secured upon a second lug of the carrier ring opposite to the lug that carries the pivot pin.

According to the present invention, we again propose to swing the cap upon a lug-supported pivot-pin on the carrier ring, but propose to substitute for the hook-and-pin fastening, a wedge-action fastening which is concealed from view when the cap is closed. For this purpose, we provide on the periphery of the carrier-ring of the device, and in suitable relation to the cap-pivot, a tongue or web which is located in the plane of the mouth of the carrier-ring (i.e., in a plane at right angles to the cap-pivot) and has its outer edge profiled eccentrically to the centre of the said carrier-ring or slightly tangential to the periphery of the ring. This tongue or web constitutes one member of the fastening, the complementary member being constituted by a hook which is located on the underside of the rim of the cap and is formed inwards of its lip with a surface profiled to correspond or substantially correspond to the edge-profiling of the tongue on the carrier ring so that when the cap is closed to engage the cap-hook over the ring-tongue, the application of slight pressure to the cap will cause the hook to wedge or bind upon the tongue and make a finger-tight connection which, however, can readily be released by pressing the edge of the cap in the direction opposite to that in which the same has to be pressed for fastening.

Usually, the cap-carrier ring of a cap or closure such as herein described is soldered or brazed to a mount-ring which in turn is soldered or brazed in the hole or aperture of the tank to which the closure is to be applied, but according to a further feature of our present invention, we propose to secure the carrier-ring mechanically and detachably to the mount and thus dispense with soldering or brazing. For this purpose, we form a screw-thread on the part of the mount that is to accommodate the cap which thread terminates in a decided annular shoulder or ledge made by reducing the diameter of the mount-ring below the screw-threading. The carrier-ring of the cap is threaded internally to screw onto the threaded part of the mount in such a manner that when the said ring is screwed down, its lower edge registers with the annular shouldering on the said mount, whilst to lock the screwed-on ring to the mount, we provide on the bottom or underside edge of the said ring, a small pivotted catch or lever, adapted, on the screwing down of the ring being completed, to be turned so that a portion thereof engages under the mount-shouldering and secures the carrier-ring against rotation in the un-screwing direction.

The interior of the cap-member of these filler-closures is usually provided with a leather or like washer-ring adapted to seat over and seal the mouth of the filling when the cap-member is closed. For securing such washer in place, we propose, according to another feature of our

present invention, to form a circular recess in the underside of the cap, and to spring snap, or otherwise secure within this cap, a metal plate or disc the middle of which is formed with a circular boss of such dimensions that when the disc is in place in the cap-recess, there exists between the central boss of the disc and the periphery of the said cap-recess, an annular depression or channelling suitable to accommodate the washer-ring, which ring is pressed into the said recess and there secured by two or more tongues which are pierced out of suitable parts of the metal of the sprung-in disc and are turned over to engage the inner edge of the washer-ring.

Dated this 20th day of September, 1928.

ARTHUR SADLER,
Chartered Patent Agent,
44, Waterloo Street, Birmingham,
Agent for the Applicants.

COMPLETE SPECIFICATION.

Improvements in Filler-caps for Petrol, Oil and other Tanks or Liquid Receptacles.

We, JAMES DOHERTY and JAMES DOHERTY the younger, both British Subjects, of 40, High Street, Deritend, Birmingham, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention has reference to filler caps or closures for the filling orifices of petrol, oil and other tanks or liquid containers such as are used on motor-cycles, motor-cars and the like, and has for its object, to provide an inexpensive but efficient device of the captive cap type in which the cap or closure-member is hinged by a vertical pivot to an internally-screwed carrier-ring that engages an externally screwed neck of the container.

According to the said invention, the cap and its carrier-ring are provided with fastening means which, on the cap being turned over the ring, establish an initial positive connection between the said cap and ring to enable them hereafter to be rotated as a unit for making a screw-sealed joint between the cap and the neck of the container. Preferably the cap is faced on its underside with a sealing-washer of compressible material which, by the collective screwing of the ring and cap downwardly upon the container-neck, is caused to bed tightly upon the mouth-edge of the said neck for making the liquid-tight joint. This screwing action also binds the cap in its closed position by screw-thrust, whereas the collective unscrewing of the cap and carrier-ring first breaks the joint and then takes the screw thrust off the cap, enabling the latter to be opened by movement relatively to its carrier.

The invention is hereinafter described, with reference to the accompanying drawing, in its application to a closure device wherein hook-like expedients are embodied in the cap and its carrier-ring for establishing the initial positive connection between the two parts.

In the said drawing,

Figure 1 is a perspective view showing the cap in its closed and sealed position, and

Figure 2 is a similar view showing the cap in the open position.

Figure 3 shows an underside plan of the device with the cap in the closed position.

Figure 4 is a transverse vertical section showing the cap closed, but not sealed, and

Figure 5 is a similar section showing the cap-member closed and sealed.

In the construction shown in the said Figures, the closure-cap *a* is pivotally mounted on a perpendicular pin *b* carried by a lug c^1 projecting radially from the periphery of a carrier-ring *c* which is screwed upon the collar d^1 of a neck-ring *d* that is brazed or otherwise permanently secured within the orifice of an oil or petrol tank, motor-radiator tank or other liquid container.

The periphery of the carrier-ring *c* is also provided, in a position diametrically opposite the cap-pivot *b*, with a tongue or web *e* which is located in a plane at right angles to the cap-pivot, and has its outer edge e^1 profiled eccentrically to the centre of the said carrier-ring or slightly tangential to the periphery of the ring. This tongue or web constitutes one member of the positive initial fastening means, the complementary member being constituted by a hook *f* which is located on the underside of the rim of the cap and is formed, inwards of its lip, with a surface profiled to correspond or substantially correspond to the edge-profiling of the tongue *e* so that when the cap is first rotated horizontally to engage the cap-hook over the ring-tongue, the continued application of

slight turning force to the cap will cause the hook to wedge or bind upon the tongue and make a finger-tight connection which, however, can readily be released by turning the cap in the direction opposite to that in which the same has to be turned for making the initial connection.

The carrier-ring is mechanically and detachably secured to the neck-ring d to enable complete removal of the said cap when required. For this purpose, the external screw-thread on the neck-ring terminates in a decided annular shoulder or ledge at d^2 and the internally-threaded carrier-ring c is furnished, on its lower edge, with a pivotted catch or lever g adapted to be turned inwards so that a portion thereof engages under the shouldering d^2 and prevents the carrier-ring and cap being completely unscrewed from the fixed mount-ring. When, however, the catch is turned outwards clear of the shouldering d^2, the unit constituted by the cap and carrier-ring a, c can be completely unscrewed and detached from the fixed neck-ring.

The underside of the cap a is furnished with a compressible washer h adapted to seat over and seal the mouth of the neck-ring by continuing the screwing-down of the cap and its carrier-ring as a unit after the initial positive connection between them has been made by the co-engagement of the hook and tongue f, e.

In the construction described, the cap a is free to be turned on the perpendicular pivot b into its open position (Figure 2) or its closed position (Figure 1) when the carrier ring c is screwed off the neck d sufficiently far to lift the sealing washer h off the mouth of the said neck-ring as shown in Figure 4, it being understood that, normally, this collective unscrewing of the cap a and ring c is limited by the catch g engaging under the shouldering d^2 of the mount as shown in Figure 4.

When, as in the illustrated construction, the screw-connection between the ring c and the neck-ring d are made by a right-handed thread, the hook-formation f on the cap and the tongue e on the ring c are so formed and disposed as to enable the engagement of the former with the latter when the cap a is turned from left to right into its orifice-closing position. Thus, on the cap being so closed over the orifice when the parts of the device are positioned as in Figure 4, it follows, that after the hook f of the cap has been interconnected with the tongue e of the ring c, the continued application of a right-handed turning force to the cap will collectively rotate the cap a and its carrier-ring c upon the neck-ring d, and, by virtue of the screw-thread connection between c and d, bring the compressible washer h on the underside of the cap into close contact with the mouth of the said ring d, thus not only establishing a liquid-tight seal between the said cap a and ring d, but also making a friction lock which prevents the unscrewing of the parts a, d, from the said sealed position. On the other hand, when it is desired to open or uncover the orifice, this can readily be done by first turning the cap a and ring c collectively in the left-handed direction and then (after the sealed joint has been broken by the lifting of the washer off the mount-ring) pivotting the cap on its hinge pin b relatively to the ring c, and thus disengaging the fastening hook f from the web e. Further, and as already mentioned, if it is desired to detach the cap completely from the mount-ring, this can readily be done by shifting the pivotted catch g clear of the mount-ring shouldering d^2 and continuing the collective left-handed rotation of the cap a and ring c until the latter is completely unscrewed from the said mount-ring.

It is obviously not essential to provide the closure-device with a removable catch such as g, or with an equivalent expedient, for limiting the rotational movement of the cap and its carrier ring in the unscrewing direction, and when such catch is dispensed with, the unit constituted by the cap and carrier-ring may be removed from the fixed mount-member merely by rotating the said unit in the screwing-off direction until the internal thread of the carrier ring disengages the external thread of the mount.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we are aware of Specification No. 280,222, which has been accepted since the date of our application, and make no claim to anything claimed therein, and we declare that what we claim is:—

1. A closure or cap of the type referred to for the filling orifices of oil, petrol and other tanks, motor-radiators and like liquid containers, wherein the cap and its carrier ring are provided with fastening means which, on the cap being turned over the ring, establish an initial positive connection between the said cap and ring to enable them thereafter to be rotated as a unit for making a screw-sealed joint between the cap and the neck of the container.

2. A closure-device as claimed in Claim 1, in which the cap is provided, on its underside, with a compressible washer or facing adapted to be compressed upon the mouth of the container neck by the col-

lective rotation of the said cap and its carrier-ring after the closing of the cap.

3. A closure-device as claimed in Claim 2, in which the cap is provided, on the side remote from its pivot pin, with a hook or equivalent formation adapted to be engaged, by the turning of the said cap into its closed position, with a complementary formation on the cap-carrier.

4. A closure-device as claimed in Claim 1, in which the unit constituted by the screw-on cap and its carrier-ring is mechanically secured to a fixed neck-ring by a device that normally limits the unscrewing of the cap-and-carrier unit, but which, when disengaged, enables the removal of the said unit from the fixed ring.

5. A closure-device as claimed in Claim 4, in which the fixed mount is externally screw-threaded and its thread terminates in a shouldering, and the screwed-on cap-carrier is provided with a removable catch adapted normally to engage under the said shouldering, but capable of being cleared of the said shouldering to permit of the complete detachment of the cap and its carrier.

6. An improved closure-device for the filling orifices of liquid receptacles, substantially as herein described with reference to the accompanying drawing.

Dated this 2nd day of May, 1929.

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Agent for the Applicants.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1930.

[This Drawing is a reproduction of the Original on a reduced scale]

Fig. 1.

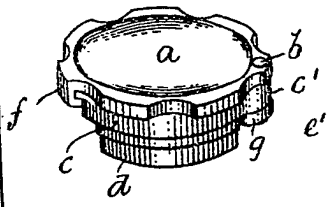


Fig. 2.

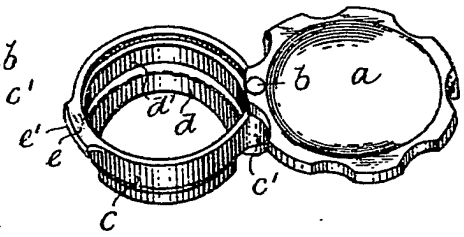


Fig. 3.

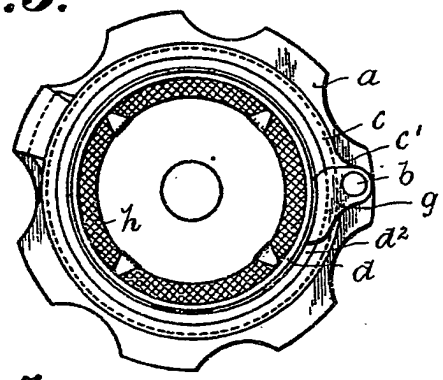


Fig. 4.

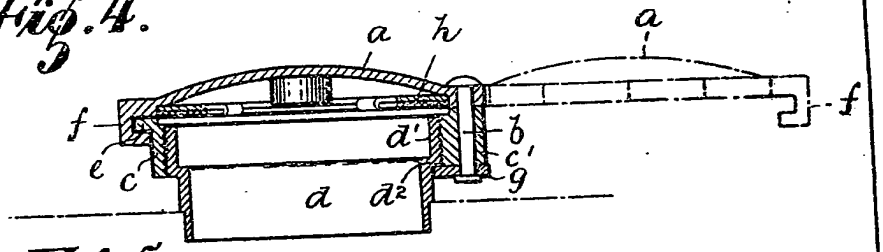
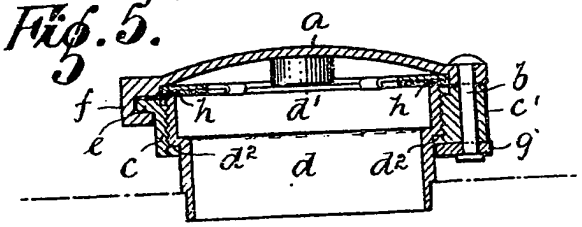


Fig. 5.



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